A STUDY ON THE USE OF MPLS- TE IN IP CORE NETWORKS

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Abstract

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Today's demand for various applications like voice, data and real time video etc., are increasing in the consumer market and stakeholders mostly expect all services from a service provider. The tremendous growth in ICT adds more users and also traffic adds another dimension. NGN is expected to be the emerging IP network to transport converged services and MPLS and MPLS- TE plays an important role in this context. These new applications have increased demand for guaranteed bandwidth in the limited backbone capacity in the provider's network and the challenge is to provide differentiated class of services with required QoS and also to produce SLA performance reports to the end users when requested. Due to numerous benefits such as guaranteed end to end QoS, link protection and efficient use of core bandwidth MPLS- TE is being recognized and becoming popular among service providers. TE enables service providers to route network traffic in such a way that they can offer the best service to their users in terms of throughput and delay.

In this research MPLS- TE approach is used to implement end to end QoS for prioritized services and a SLA program is developed using SNMP to produce end to end reports on critical performance metrics like delay, round trip time, jitter and application aware services to customers. The study also investigates the process of steering traffic across the MPLS/IP core backbone to facilitate efficient use of available bandwidth between a pair of backbone routers to ensure the required service levels. Hence in a multilink environment where many links are available for routing we can avoid the shortest paths being congested. Since network can have different types of packets; packets were generated and marked based on DSCP for QoS which were routed in different TE tunnels in a lab environment. The lab results showed that, using, TE tunriels constrained routing can provide explicit paths to required destinations regardless of the paths calculated by the routing protocols thus

bandwidth efficiency can be achieved in the core while ensuring end to end QoS for critical applications for a given IP SLA. Also, results obtained by the SLA program from a live operational network were acceptable in providing SLA performance reports.